

A BRYOZOAN FAUNA FROM THE LAKE'S CREEK QUARRY, ROCKHAMPTON,  
QUEENSLAND.

By JOAN CROCKFORD, M.Sc., Linnean Macleay Fellow of the Society in Palaeontology.

(Twelve Text-figures.)

[Read 27th June, 1945.]

INTRODUCTION.

A collection of specimens rich in Bryozoa from in and around the Lake's Creek Quarry near Rockhampton in Queensland was recently lent to me by Mr. O. A. Jones of the University of Queensland. A brief summary of the opinions published regarding the age of the Lake's Creek beds, and of the *Trachypora wilkinsoni*\* horizon which occurs behind the Quarry, has been given by Bryan and Jones (1944, 43, 71). The commonest species in the bryozoan fauna are described in this paper, and amongst the fourteen species and varieties here described or recorded, there are six previously described species; these six species are all forms which are known only from the Lower Permian.

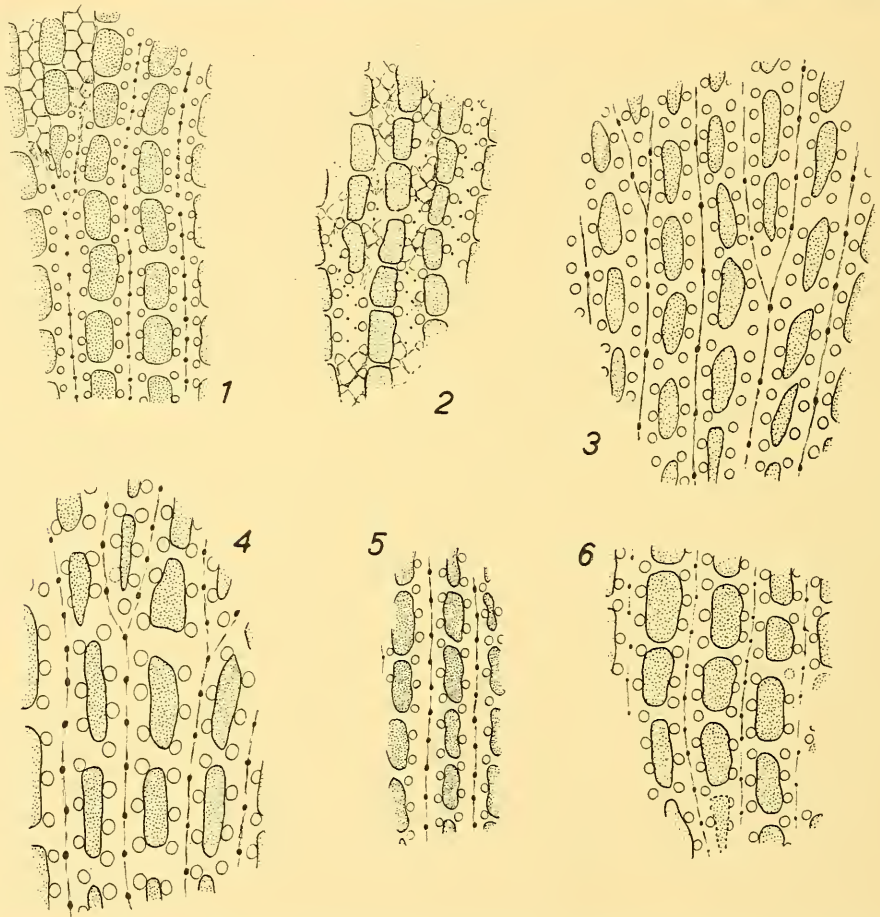
The forms present in the collection which I have used are almost exclusively Fenestrellinidae; a few poorly preserved Batostomellidae also occur, but they are not well enough preserved for description. The specimens are preserved almost entirely as casts, which are often crushed and distorted; many of these casts do, however, show their specific characters very perfectly indeed.

Of the six previously described species which are here recorded from Lake's Creek Quarry, *Fenestrellina aspratilis* (Bassler), 1929, occurs in both the Bitaoeni and Basleo Beds in Timor, and is probably the same as *F. girtyi* Elias, 1937, from the Dark Limestone, Guadalupian Group, Guadalupe Mts., Texas; *Fenestrellina granulifera* Crockford, 1941, occurs in New South Wales in the Fenestella Shales of the Branxton Beds, Upper Marine Series, and in Tasmania in the Permian at Huon Rd., Mt. Wellington; *Fenestrellina canthariformis* Crockford, 1941, also occurs in the Fenestella Shales, and occurs in the Springsure district of Queensland at Consuelo Creek, 2 miles above Cattle Creek, Horizon A in the Dilly Stage of Reid (1930, 95), which is also loc. 9 in Whitehouse's list of fossils at the end of Reid's paper; *Polypora woodsi* Etheridge, 1892, occurs at several localities in the Fenestella Shales, and at Ulladulla, on the South Coast of New South Wales, in the Permian at Marlborough, Tasmania, in both the Callytharra and Nooncanbah Series in Western Australia, and in the Bitaoeni Beds of Timor (as *Polypora tripliseriata* Bassler, 1929); *Polypora woodsi* also occurs at the same locality as *F. canthariformis* near Springsure, and Etheridge has recorded it from "below Sonoma Rd. crossing, Coral Ck., Bowen R.", Queensland; *Polypora virga* Laseron, 1918, is common in the Fenestella Shales of the Upper Marine Series, but does occur as well in the Allandale Stage of the Lower Marine Series, and it also occurs at Marlborough, Tasmania; *Minitya duplaris* Crockford, 1944, occurs in Western Australia from the Callytharra Series through to the Wandagee and Nooncanbah, and is one of the commonest species in the Western Australian Permian; it also occurs in the Northern Territory in the Port Keats Bore, and at the same locality as *F. canthariformis* and *P. woodsi* near Springsure; this species is probably the same as the species figured as *Fenestella perelegans* Meek, 1871, by Waagen and Pichl (1885) from the Middle Productus Limestone of the Salt Ra.; (this Indian species is not the same as the specimens originally figured by Meek from North America). So far as the age of the strata at

\* *Thamnopora wilkinsoni* (Etheridge), Hill, 1943 (*J. Roy. Soc. W. Aust.*, 27 (for 1940-41): 67).

Lake's Creek Quarry is concerned, therefore, the evidence from these Bryozoa is not sufficient to give close correlation with any one stage of the Permian sequence in Western Australia, Timor, or New South Wales, although they do indicate that the age of the Lake's Creek beds is Lower Permian.

Reid (1930, 41-2) stated that the Lake's Creek Quarry and the Gympie Beds were tied to the Neerkol Series of Upper Carboniferous age "to some extent, palaeontologically, notably with *Protoretepora*, *Rhombopora laxa*, *Polypora smithii*, and, provisionally, *Aviculopecten squamuliferus*, *Productus subquadratus* (Lake's Creek type), and possibly *Stenopora*". So far as the four bryozoans mentioned in support of this correlation are concerned, there could be no evidence whatsoever in the presence of the forms mentioned to support a correlation between Lake's Creek Quarry and the Neerkol. *Protoretepora*, in the sense in which the name has been used in the past, refers to the presence of any coarse fenestrate bryozoan, generally to some species of *Polypora*; in Eastern Australia



Text-fig. 1.—*Fenestrellina canthariformis* Crockford. Celluliferous surface of a specimen (F.7970, Univ. Queensland Colln.) from the *Trachypora* horizon behind Lake's Creek Quarry,  $\times 10$ .

Text-fig. 2.—*Minilya duplaris* Crockford. Celluliferous surface of a specimen (F.7973, Univ. Queensland Colln.) from the *Trachypora* horizon behind Lake's Creek Quarry,  $\times 10$ .

Text-fig. 3.—*Fenestrellina sparsinodata*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

Text-fig. 4.—*Fenestrellina granulifera* Crockford. Celluliferous surface of a specimen (F.7962, Univ. Queensland Colln.) from Lake's Creek Quarry,  $\times 10$ .

Text-fig. 5.—*Fenestrellina aspratilis* Bassler. Celluliferous surface of a specimen (F.7961B, Univ. Queensland Colln.) from Lake's Creek Quarry,  $\times 10$ .

Text-fig. 6.—*Fenestrellina simulatrix*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

*Polypora* is fairly common in almost all the Upper Palaeozoic deposits in which fenestrellids occur, and the genus itself ranges from the Ordovician to the Permian, so that, unless the same species were proved to occur in the Neerkol and at Lake's Creek (and this has not been done), the presence of this form is of no account in correlation. *Rhombopora laxa* (Etheridge), 1872, was figured with the original description (Etheridge, 1872, 332, Pl. xxv, figs. 2, 2a), and has also been figured by R. Etheridge, jr. (1892, 224, Pl. ix, figs. 8, 9), but neither of these descriptions and figures are sufficiently clear for recognition of this form, since none of the characters important in the determination of ramose Bryozoa is described or illustrated. *Polypora smithii* Etheridge, 1892, also could not be recognized from the original description and figures, which cover more than one species; and *Stenopora*, which is common in the Permian, occurs, though rarely, in the Carboniferous also, so that the occurrence of the genus does not indicate any special horizon. None of the bryozoan species quoted by Reid, therefore, could be used for correlation between the Neerkol and Lake's Creek Beds.

Whitehouse (1928, 1929) has also discussed the age of the Lake's Creek Quarry beds, and has suggested that they should be correlated with the horizon of the Greta Coal Measures in New South Wales and the Yatton Limestone and Collinsville Coal Measures of the lower part of the Middle Bowen Series in the Bowen River Coalfield in Queensland. I have, unfortunately, no specimens from the Bowen River Coalfield with which I could compare these specimens. Dr. Whitehouse placed all the beds below the top of the Greta Coal Measures in the Carboniferous; at present the boundary between the Permian and the Carboniferous is placed lower in the sequence, being placed by different workers either at the base of the Lower Marine Series or at the *Eurydesma cordatum* horizon in the lower part of this Series.

#### DESCRIPTION OF SPECIES.

##### Order CRYPTOSTOMATA Vine.

##### Family FENESTRELLINIDAE Bassler.

##### GENUS FENESTRELLINA d'Orbigny, 1849.

##### FENESTRELLINA SIMULATRIX, n. sp. Text-fig. 6.

*Holotype*: F7950A, Univ. Queensland Colln.

*Locality*: Lake's Creek Quarry, Rockhampton, Queensland (holotype); *Trachypora* horizon behind Lake's Creek Quarry (F7951A, B, Univ. Queensland Colln.).

*Fine* Fenestrellina, with 3 zooecia to a fenestrule; carina slight; nodes sharp, small, not very closely spaced.

The zoarium is fenestrate; there are from 11 to 13 fenestrules, and about 15 to 20 branches, in 10 mm. The branches are thin, 0.27 to 0.35 mm. in width, with a slight but usually distinct median carina, which bears a single row of small, sharp nodes, elongated parallel to the length of the branch along their bases; these nodes are spaced 0.27 to 0.5 mm. apart, and there are about 25 in 10 mm. The zooecial apertures are placed on the rather flattened sides of the branches, and they do not project into the fenestrules; the apertures are circular, 0.14 mm. in diameter, and are surrounded by only very slight peristomes; there are about three apertures to a fenestrule, and 31 in 10 mm., the distance between the centres of successive apertures being 0.25 to 0.43 mm. The fenestrules are rectangular, 0.6 to 0.95 mm. long, and between 0.24 and 0.4 mm. wide; the width of the dissepiments is from 0.06 to 0.19 mm., and the length of one fenestrule and one dissepiment is from 0.7 to 1.08 mm.

This species resembles rather closely *Fenestrellina dispersa* Crockford, 1943, a very common form in the Permian of New South Wales, Tasmania and Central Queensland; constant differences in the measurements of the spacing of the nodes and of the zooecia in these specimens from Lake's Creek, however, indicate that this form is a distinct species. *Fenestrellina pulchradorsalis* (Bassler), 1929, from the Somohole and Bitaoeni Beds of Timor, is also a very similar species; the spacing of its zooecia is similar, but, although Bassler mentions the presence of nodes in his description of this form, he gives no indication of their spacing, and this cannot be determined from the illustrations, so that complete comparison with this Timor species is not possible.

## FENESTRELLINA SPARSINODATA, n. sp. Text-fig. 3.

*Holotype*: F.7952, Univ. Queensland Colln.

*Locality*: *Trachypora* horizon behind Lake's Creek Quarry, Rockhampton.

*Fine Fenestrellina, 3 zooecia to a fenestrule; nodes small and widely spaced on the carina.*

The zoarium is fenestrate; in 10 mm. there are from about 12 to 20 branches, and 10 to 12 fenestrules. The branches are straight, 0.25 to 0.41 mm. wide, and there are two rows of small, oval zooecial apertures, 0.14 × 0.1 mm. in diameter, separated by a thin but sharp median carina, on which there is a single row of small, sharp, widely spaced nodes; the nodes are placed 0.66 to 0.92 mm. apart, and there are about 12 nodes in 10 mm. The apertures are surrounded by slight peristomes; the distance between the centres of successive apertures is 0.25 to 0.4 mm., and there are 32 apertures in 10 mm., with usually 3, rarely 4, to a fenestrule. The fenestrules are oval, 0.6 to 1.03 mm. long and 0.13 to 0.36 mm. wide; the dissepiments are 0.11 to 0.33 mm. wide, and the length of one fenestrule and one dissepiment is from 0.82 to 1.22 mm. The reverse surface of both branches and dissepiments is smooth and evenly rounded, and they are both of about the same thickness.

*Fenestrellina disjecta* Crockford, 1944, from the Wandagee and Nooncanbah Series of Western Australia, is similar in its general appearance to this species, but its apertures are more closely, and its nodes more widely, spaced.

## FENESTRELLINA ROCKHAMPTONENSIS, n. sp. Text-fig. 10.

*Holotype*: F.7953A, Univ. Queensland Colln.

*Locality*: Lake's Creek Quarry, Rockhampton.

*Coarse Fenestrellina, 4 zooecia to a fenestrule; carina broad and indistinct; nodes large, distant, and irregularly spaced.*

The zoarium is fenestrate; there are 11 to 14 branches horizontally, and 6 to 9 fenestrules vertically, in 10 mm. The branches are broad, 0.33 to 0.54 mm. wide; there are two rows of zooecial apertures, separated by a broad, indistinct carina, on which there is a single row of very large, irregularly spaced nodes; the distance between successive nodes is from 0.47 to 1.85 mm., and on an average there are about 10 nodes in 10 mm. These nodes are up to 0.45 × 0.29 mm. in diameter at the base. The surface of the carina and between the apertures is ornamented by rows of tiny granules and by discontinuous grooves. The zooecial apertures are rounded, 0.2 mm. in diameter, and they are placed on the slightly sloping sides of the branches. No peristomes are developed; the distance between the centres of successive apertures is 0.25 to 0.46 mm., and the average number of zooecia in 10 mm. is 28. The fenestrules are oval, 0.79 to 1.5 mm. long and 0.4 to 0.79 mm. wide; the width of the dissepiments is 0.08 to 0.38 mm., the total length of one fenestrule and one dissepiment being from 1.08 to 1.76 mm. On the reverse surface both branches and dissepiments appear to be smooth and evenly rounded, the dissepiments being less thick than the branches.

The closer spacing of the zooecia, and the irregular and more distant spacing of the nodes, distinguish this species from *Fenestrellina granulifera*.

## FENESTRELLINA SPARSA, n. sp. Text-fig. 7.

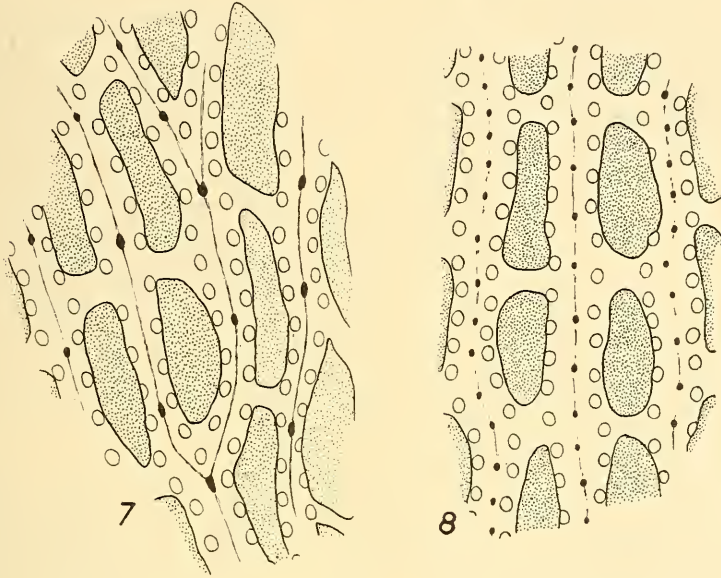
*Holotype*: F.7954, Univ. Queensland Colln.

*Locality*: *Trachypora* horizon behind Lake's Creek Quarry, Rockhampton.

*Coarse Fenestrellina, branches sinuous, 4 to 6 zooecia to a fenestrule; nodes distant and irregularly spaced, but large.*

There are 6 to 12 branches, and from slightly less than 5 to 6 fenestrules, in 10 mm. The branches are typically not straight, but rather flexuous; they are 0.44 to 0.67 mm. in width. Between the two rows of apertures there is only a very slight median carina, on which there is a single row of large, widely spaced nodes, whose bases are elongated parallel to the length of the branches. The distance between the nodes is from 1.14 to 1.82 mm.; there are about 7 nodes in 10 mm. The apertures are rounded, 0.16 mm. in diameter, and are surrounded by very thin, slight peristomes; there are 4 to 6 apertures to a fenestrule, the distance between the centres of successive apertures being 0.3 to

0.51 mm.; there are 25 apertures in 10 mm. Increase to three rows of zooecia occurs only immediately before branching. The fenestrules are 1.36 to 2.57 mm. long, and from 0.4 to 0.95 mm. wide; the width of the dissepiments is from 0.17 to 0.55 mm., and the length of one fenestrule and one dissepiment from 1.54 to 2.93 mm. On the reverse surface both branches and dissepiments are smooth and evenly rounded, and they are of about the same thickness. The zooecia themselves are rather triangular in outline.



Text-fig. 7.—*Fenestrellina sparsa*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

Text-fig. 8.—*Fenestrellina spinifera*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

FENESTRELLINA SPINIFERA, n. sp. Text-fig. 8.

*Holotype*: F.7955A, Univ. Queensland Colln.

*Locality*: *Trachypora* horizon behind Lake's Creek Quarry, Rockhampton.

*Coarse Fenestrellina*, 3 to 6 zooecia to a fenestrule; slight carina with small, comparatively closely spaced nodes.

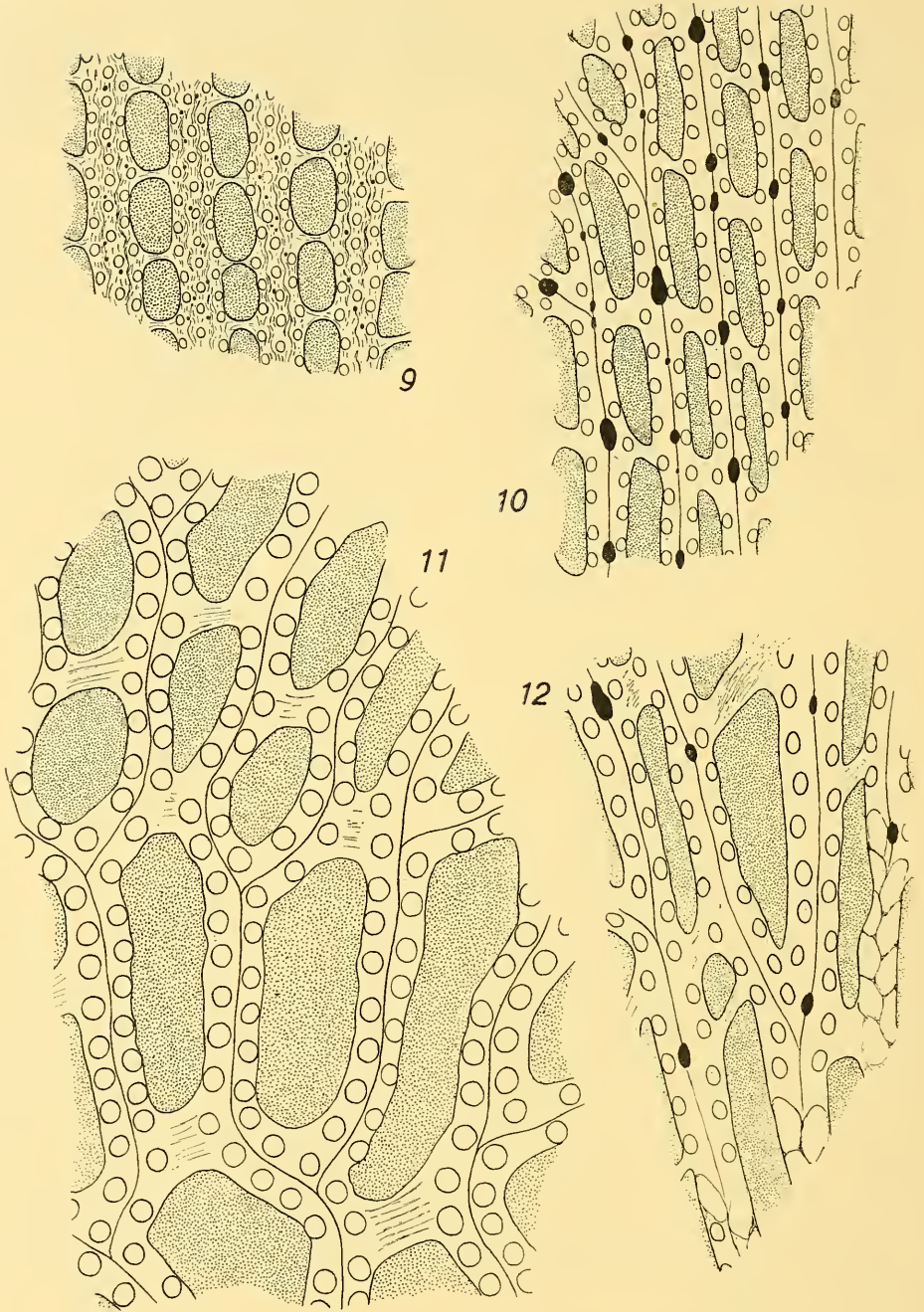
There are 9 to 16 branches, and 5 to 6.5 fenestrules, in 10 mm. The branches are straight to slightly sinuous, 0.33 to 0.65 mm. wide, and there is a slight, rounded median carina, which bears a single row of small, rather closely spaced nodes; these nodes are 0.43 to 0.59 mm. apart, and there are 20 in 10 mm. There are two rows of zooecial apertures; 3 to 6 apertures occur to a fenestrule, and 24 in 10 mm., the distance between the centres of successive apertures being 0.32 to 0.55 mm.; the apertures are rounded, 0.13 mm. in diameter, and they are surrounded by thin, slight peristomes. The fenestrules are from 1.0 to 2.12 mm. long, and 0.14 to 0.92 mm. wide; the width of the dissepiments is 0.12 to 0.48 mm., and the length of one fenestrule and one dissepiment from 1.44 to 2.35 mm. The reverse surface of both the branches and the dissepiments are evenly rounded, the branches being thicker than the dissepiments; the reverse of the branches was apparently ornamented by coarse granules, so far as is shown in the specimens available.

FENESTRELLINA EXPANSA, n. sp. Text-fig. 11.

*Holotype*: F.7956A, Univ. Queensland Colln.

*Locality*: Lake's Creek Quarry, Rockhampton (holotype); *Trachypora* horizon behind Lake's Creek Quarry (F.7957, Univ. Queensland Colln.).

*Very coarse Fenestrellina*, 4 to 10 zooecia to a fenestrule; carina high, rounded, and without nodes.



Text-fig. 9.—*Polypora minuta*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

Text-fig. 10.—*Fenestrellina rockhamptonensis*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

Text-fig. 11.—*Fenestrellina expansa*, n. sp. Celluliferous surface of the holotype,  $\times 10$ .

Text-fig. 12.—*Fenestrellina expansa* var. *nodulifera*, n. var. Celluliferous surface of the holotype,  $\times 10$ .

The zoarium is fenestrate, and is very coarse-meshed, there being 6 to 7.5 branches, and only 2 to 3.5 fenestrules, in 10 mm. The branches are flexuous, and they bifurcate very frequently, usually within three fenestrules; there are two rows of zooecial apertures, increasing to three only immediately before bifurcation; there is a broad, rounded, and rather high carina along the centre of the branches, but no nodes appear to be developed on it. The apertures are placed on the slightly flattened sides of the branches; they are large and round, about 0.24 mm. in diameter, and are surrounded by slight peristomes. The celluliferous surface between the apertures was ornamented by fine discontinuous ridges and grooves. There are from 4 to 10 apertures to a fenestrule, and about 21 in 10 mm., the distance between the centres of successive apertures being 0.38 to 0.58 mm. The fenestrules are irregularly rectangular; they are from 1.1 to 5.3 mm. long and from 0.4 to 1.45 mm. wide; the width of the dissepiments is from 0.5 to 1.0 mm. On the reverse surface both branches and dissepiments were evenly rounded and apparently without ornamentation; the branches were much thicker than the dissepiments.

This species resembles *Fenestrellina regina* (Bassler), 1929, from the Amarassi (?) Beds of Timor; the irregularity in the length and shape of the fenestrules in these Queensland specimens is, however, different from the habit of the zoarium shown in Bassler's figures of *F. regina*, and the spacing of the zooecia in *F. regina* (about 27 to 28 in 10 mm.) is much closer than in *F. expansa*. Another species which shows resemblances to this form is *F. chapmani* Crockford, 1944, from the Callytharra Series (Permian) of Western Australia; *F. chapmani*, however, has only a slight carina, with very large and prominent nodes, absent in *F. expansa*.

FENESTRELLINA EXPANSA VAR. NODULIFERA, n. var. Text-fig. 12.

*Holotype*: F.7958A, Univ. Queensland Colln.

*Locality*: *Trachypora* horizon behind Lake's Creek Quarry, Rockhampton.

*Very coarse Fenestrellina, 6 to 8 zooecia to a fenestrule; carina slight, with large nodes developed at very distant but fairly regular intervals.*

There are about nine branches, and three fenestrules, in 10 mm. The branches are straight, 0.55 to 0.71 mm. long, and bear two rows of zooecial apertures separated by a slight, median carina, on which very large nodes are developed; these nodes are placed at distant but usually fairly regular intervals, generally being between 3.1 and 3.5 mm. apart. The apertures are oval, about 0.3 × 0.17 mm. in diameter; there are 6 to 8 apertures to a fenestrule, and 21 in 10 mm., the distance between the centres of successive apertures being 0.38 to 0.57 mm. The fenestrules are normally from 2.1 to 3.7 mm. long, although abnormal fenestrules of small size do occur, and they are 0.15 to 0.87 mm. wide; the width of the dissepiments is 0.19 to 0.84 mm., the length of one fenestrule and one dissepiment being 2.98 to 4.2 mm.

This form is so similar to *F. expansa*, except in the occurrence of large nodes, that it seems best to consider it a variety of the more abundant species. It is distinguished from *F. chapmani* by the very different spacing of its nodes.

FENESTRELLINA ASPRATILIS (Bassler), 1929. Text-fig. 5.

*Fenestella aspratilis* Bassler, 1929, 76, Pl. ccxli (17), figs. 14-17; *Fenestella spinulosa* Condra ?, Girty, 1908, 137, Pl. xix, fig. 4; *Fenestrellina girtyi* Elias, 1937, 314, fig. 1.

In the specimens from Lake's Creek Quarry (F.7950B, F.7959, F.7960A, F.7961A, B, Univ. Queensland Colln.), there are 16 to 20 branches, and 14 to 17 fenestrules, in 10 mm. The branches are straight, 0.24 to 0.32 mm. wide; there is a slight median carina, on which there is a single row of sharp, high nodes, elongated along their bases; these nodes are spaced from 0.25 to 0.38 mm. apart, and there are about 31 in 10 mm. There are two rows of small, circular zooecial apertures, 0.1 mm. in diameter, surrounded by slight peristomes; the distance between the centres of successive apertures is from 0.25 to 0.38 mm., and there are 32 apertures in 10 mm. The apertures are frequently placed so that one is opposite the end of each dissepiment and one at the centre of each fenestrule, and here the fenestrules are hour-glass shaped, but the arrangement of the apertures is not always regular. The fenestrules are 0.47 to 0.71 mm. long and 0.19 to

0.43 mm. wide, and the width of the dissepiments is from 0.08 to 0.19 mm.; the length of one fenestrule and one dissepiment is from 0.55 to 0.87 mm. On the reverse surface the branches are rather thicker than the dissepiments; both are evenly rounded, and in places the backs of the branches appear to have been coarsely granular. The full range of variation in measurements is usually shown in the one specimen.

Elias (1937, 314) discussed at some length the characters of *Fenestella spinulosa* Condra?, Girty, which he named *Fenestrellina girtyi* Elias, and he pointed out its affinities to the *Fenestrellina mimica* group of fenestrellids; it appears from the measurements given by him and by Girty, and from additional measurements taken on Girty's diagrams, that this species from the "Dark Limestone" of the Guadalupian Group in the Guadalupe Mts. of Texas, is the same as *F. aspratilis* (Bassler), from the Bitaoeni and Basleo Beds of Timor; the measurements of specimens from these two areas and from Lake's Creek are compared in Table 1. Girty's specimens evidently did not show the nodes ornamenting the reverse surface described by Bassler, and this ornamentation is only doubtfully shown in the Lake's Creek specimens; this, however, is not sufficient basis for the separation of these specimens into different species, as, when the reverse surface is weathered, these coarse granules readily disappear, and they do not show the scars shown when the nodes along the carina have been weathered away; in other species in which coarse granules are developed on the reverse surface, they are frequently not at all constantly developed, even over the surface of the one specimen.

FENESTRELLINA GRANULIFERA Crockford, 1941. Text-fig. 4.

*Fenestrellina granulifera* Crockford, 1941, 509, Pl. xxi, fig. 4; 1943, 266.

This species is one of the commonest forms in material from Lake's Creek Quarry (specimens F.7950C-E, F.7960A, F.7962-5, F.7966A-D, F.7967-8, Univ. Queensland Colln.), and occurs also in material from the *Trachypora* horizon behind the same Quarry (F.7969, Univ. Queensland Colln.). The characters shown by these specimens correspond very closely with those of the holotype; the range of variation is rather greater in the Queensland specimens, as would be expected from the larger number of specimens available for study. In these specimens there are from 6 to 9 fenestrules, and 12 to 16 branches, in 10 mm.; the branches, which are 0.28 to 0.52 mm. wide, have a slight median carina, which bears a single row of large, blunt nodes, placed 0.4 to 0.73 mm. apart, with 18 in 10 mm. The zoecial apertures are rather large, about 0.2 mm. in diameter, and are not very closely spaced, there being about 25 in 10 mm., and usually 4 to a fenestrule; the distance between the centres of successive apertures is from 0.3 to 0.55 mm. The fenestrules are 0.8 to 1.76 mm. long, and from 0.13 to 0.92 mm. wide; the width of the dissepiments is from 0.08 to 0.4 mm., and the length of one fenestrule and one dissepiment usually between 1.0 and 1.9 mm.

FENESTRELLINA CANTHARIFORMIS Crockford, 1941. Text-fig. 1.

*Fenestrellina canthariformis* Crockford, 1941, 510, Text-fig. 2a.

Three specimens (F.7970-2, Univ. Queensland Colln.) amongst the material from the *Trachypora* horizon behind Lake's Creek Quarry agree in their characters with the holotype of this species; one of these specimens, showing the characteristic very closely spaced nodes and apertures, is figured in Text-fig. 1.

Genus MINILYA Crockford, 1944.

MINILYA DUPLARIS Crockford, 1944. Text-fig. 2.

*Minilya duplaris* Crockford, 1944, 173, Pl. 1, figs. 5, 7; Text-fig. 1, C, D.

One specimen of this species was found in material from the *Trachypora* horizon behind Lake's Creek Quarry (F.7973, Univ. Queensland Colln.), and a second in material from Lake's Creek Quarry (No. 55 in Reid's Collection of fossils in the Univ. Queensland Colln.). Although the preservation of these specimens is indifferent, they are characteristic specimens of this species, very common in the Permian of Western Australia. In addition to occurring at this locality, *M. duplaris* also occurs—associated with *Fenestrellina horologia* (Bretnall), another common Western Australian species, and a



number of other fenestrate Bryozoa—at Consuelo Creek, 2 miles above Cattle Creek, Springsure district, Queensland.

Genus POLYPORA McCoy, 1845.

POLYPORA MINUTA, n. sp. Text-fig. 9.

*Holotype*: F.7974A, Univ. Queensland Colln.

*Locality*: *Trachypora* horizon behind Lake's Creek Quarry (holotype); Lake's Creek Quarry (F.7975, Univ. Queensland Colln.).

*Fine Polypora, zooecia in 3 rows, with 3 zooecia in each row to a fenestrule; surface ornamented by discontinuous ridges and grooves between the apertures, and by a few small nodes.*

There are 11 to 12 branches, and 10 to 12 fenestrules, in 10 mm. The branches are narrow, 0.43 to 0.52 mm. wide; normally there are three rows of zooecial apertures, with two just after and four just before bifurcation. The apertures are slightly oval, about 0.17 × 0.14 mm. in diameter; they are surrounded by very thin, high peristomes, and are frequently closed by a centrally perforated calcareous plate. There are 3 apertures to a fenestrule, and 28 to 29 in 10 mm., the distance between the centres of successive apertures being 0.28 to 0.43 mm. The fenestrules are oval, 0.63 to 1.0 mm. long and 0.3 to 0.55 mm. wide; the width of the dissepiments is 0.1 to 0.2 mm., and the length of one fenestrule and one dissepiment 0.82 to 1.13 mm. On the reverse surface the branches are flattened, and the dissepiments, which are much thinner, are rounded. The casts showed the longitudinal striae shown on the worn reverse surface of most fenestellids, but were not well enough preserved to show if any other ornamentation occurred.

POLYPORA VIRGA Laseron, 1918.

*Polypora virga* Laseron, 1918, 192, Pl. vii, fig. 4, Pl. viii, fig. 2; *Polypora virga* Laseron, Crockford, 1941, 410, Pl. xix, fig. 3.

A single specimen (F.7976, Univ. Queensland Colln.), from Lake's Creek Quarry, is referred to this species, which is a common form in the Upper Marine Series of New South Wales, and which occurs also in the Lower Marine Series in New South Wales, and in the Permian at Marlborough, Tasmania. In its measurements and general appearance this specimen from Queensland compares closely with the neotype.

POLYPORA WOODSI (Etheridge), 1892.

*Protorettepora ampla* (Lonsdale), de Koninck, 1878, 42, t. 8, figs. 5, a-c; [non] *Fenestella ampla* Lonsdale, 1844, 163; *Protorettepora* sp. indet. Etheridge, 1880, 16; *Protorettepora ampla* var. *woodsii* Etheridge, 1892, 222, Pl. 8, fig. 12; *Polypora tumula* Laseron, 1918, 191, Pl. vii, fig. 3, Pl. ix; *Polypora tripliseriata* Bassler, 1929, 79, Pl. cexlii (18), figs. 14-16.

Two typical specimens (F.7953B, C, Univ. Queensland Colln.) of this common species occur in material from Lake's Creek Quarry.

SUMMARY.

Fourteen species and varieties of *Fenestella* and *Polypora* occurring in Permian strata in and near the Lake's Creek Quarry in the Rockhampton district of Queensland are described. Of these forms, six are species previously described from Lower Permian rocks in Eastern or Western Australia or in Timor, five are described as new species and one as a new variety. Bryozoa have previously been recorded from this Quarry, and their occurrence has been quoted in support of correlations between the Lake's Creek Quarry beds and the Neerkol Series of Upper Carboniferous age; it is here shown that such a correlation based on the Bryozoa is untenable, the age of the Lake's Creek beds being Lower Permian.

BIBLIOGRAPHY.

- BASSLER, R. S., 1929.—The Permian Bryozoa of Timor. *Paläontologie von Timor*, xvi Lief., xxviii.  
 BRYAN, W. H., and JONES, O. A., 1944.—A Revised Glossary of Queensland Stratigraphy. *Univ. Qd., Pap. Dept. Geol.* n.s., 2 (11).

- CROCKFORD, JOAN, 1941a.—Permian Bryozoa from Eastern Australia, Part i: A Revision of Some Previously-named Species of Fenestrellinidae (Fenestrellidae). *J. Roy. Soc. N.S.W.*, 74: 397.
- , 1941b.—Permian Bryozoa from Eastern Australia, Part ii: New Species from the Upper Marine Series of New South Wales. *Ibid.*, 74: 502.
- , 1943.—Permian Bryozoa of Eastern Australia, Part iii: Batostomellidae and Fenestrellinidae from Queensland, New South Wales, and Tasmania. *Ibid.*, 76: 258.
- , 1944a.—Bryozoa from the Wandagee and Nooncanbah Series (Permian) of Western Australia, Part i. *J. Roy. Soc. W. Aust.*, 28: 165.
- , 1944b.—A Revision of some Previously Described Species of Bryozoa from the Upper Palaeozoic of Western Australia. *Ibid.*, 28: 187.
- , 1944c.—Bryozoa from the Permian of Western Australia. Part i. Cyclostomata and Cryptostomata from the North-West Basin and Kimberley District. *Proc. Linn. Soc. N.S.W.*, 69 (3-4): 139.
- ELIAS, M. K., 1937.—Stratigraphic Significance of Some Late Paleozoic Fenestrate Bryozoans. *J. Paleont.*, 11 (4): 306.
- ETHERIDGE, R., snr., 1872.—Palaeozoic and Mesozoic Fossils from Queensland. *Quart. J. Geol. Soc.*, 28: 317.
- ETHERIDGE, R., jnr., 1880.—On a Collection of Fossils from the Bowen R. Coalfield and the Limestone of the Fanning R., North Queensland. *Proc. Phys. Soc. Edinb.*, 5: 1.
- , 1892.—In Jack, R. L., and Etheridge, R., jnr., Geology and Palaeontology of Queensland and New Guinea. *Qd. Geol. Surv.*, Publ. No. 92.
- GIRTY, G. H., 1908.—Guadalupian Fauna. *U.S. Geol. Surv.*, Prof. Pap. 58.
- KONINCK, L. G. de, 1877.—Recherches sur les fossiles paléozoïques de la Nouvelle Galle du Sud. *Mém. Soc. Sci. Liège.* (2) 8: 1. Reprinted in English in *Mem. Geol. Surv. N.S.W.*, Palaeont., 6.
- LASERON, C. F., 1918.—Notes on Some Permo-Carboniferous Fenestrellidae, with Descriptions of New Species. *J. Roy. Soc. N.S.W.*, 52: 181.
- LONSDALE, W., 1844.—In Darwin, C., Geological Observations on Volcanic Islands.
- MEEK, F. B., 1872.—In Hayden's Final Report on the Geological Survey of Nebraska, etc., Part 2. Paleontology.
- ORBIGNY, A. d', 1849.—Sur Quelques Genres Nouveaux de Mollusques Bryozoaires. *Rev. Mag. Zool.*, (2) 1: 499.
- REID, J. H., 1928.—Central Queensland Geological Section. *Qd. Govt. Min. J.*, 29: 384.
- , 1936.—The Queensland Upper Palaeozoic Succession. *Qd. Geol. Surv. Publ.* No. 278.
- WAAGEN, W., and PICHL, J., 1887.—Salt Range Fossils. *Palaeontologica Indica.* (13) 1.
- WHITEHOUSE, F. W., 1928.—Central Queensland Geology. *Qd. Govt. Min. J.*, 29: 441.
- , 1929.—In Bryan, W. H., Report of Carboniferous and Permo-Carboniferous Correlation Committee. *Rep. Aust. Ass. Adv. Sci.*, Hobart, 1928, 19: 74.
- , 1930.—Report on a Collection of Fossils made by Mr. J. H. Reid, in the Springsure District. *Qd. Govt. Min. J.*, 31: 156.